

Trend Study 2-9-01

Study site name: Beirdneau.

Vegetation type: Bitterbrush.

Compass bearing: frequency baseline 159 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

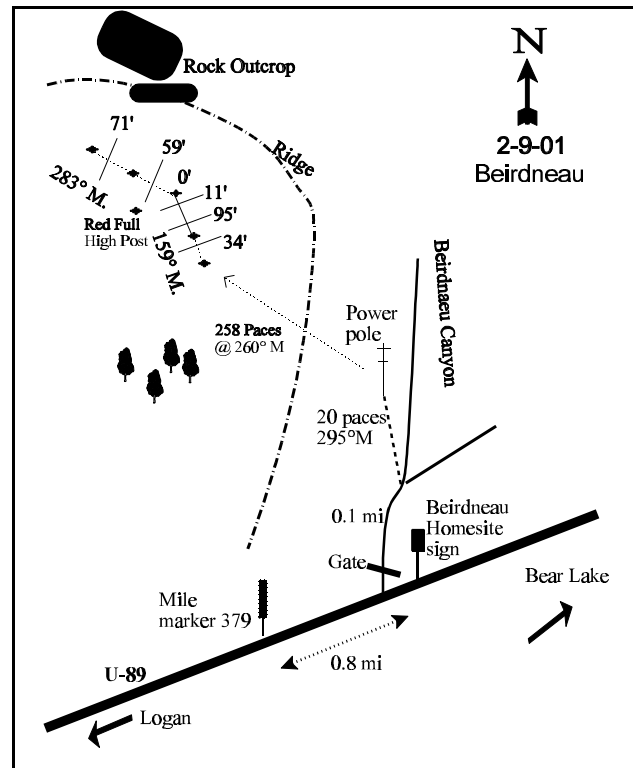
LOCATION DESCRIPTION

Proceed up Logan Canyon to mile marker 379 and begin to note mileage. Continue 0.8 miles to the Forest Service sign "Beirdneau Summer Home Sites." Turn left here and proceed 0.1 miles to a fork and stop. Walk to the power pole on the left at a bearing of 295 degrees magnetic and about 20 paces. Take a bearing of 260 degrees magnetic from the pole and walk 285 paces to the 0-foot stake of the baseline marked by browse tag #7928. The baseline runs at 159 degrees magnetic. The second stake is placed 50 feet down the slope at the same bearing. The third and fourth stake are placed 100 feet apart above the 0-foot baseline stake at a bearing of 283 degrees magnetic.



Map Name: Mt. Elmer

Township 12N, Range 2E, Section 23



Diagrammatic Sketch

UTM 4623776 N, 441999 E

DISCUSSION

Trend Study No. 2-9

The Beirdneau trend study is located on a steep (55%) south-facing slope at 5,560 feet in elevation. It is slightly north of the Beirdneau summer home site in Logan Canyon. The area is considered a normal deer winter range that possesses a good mix of mountain big sagebrush and antelope bitterbrush, interspersed with juniper. Like many of the sites in this unit, wildlife use was heavy in 1984, but is currently light. A pellet group transect read at the site in 2001 estimated 17 deer and 3 elk days use/acre (41 ddu/ha and 8 edu/ha). Elk and deer pellet groups appear to be mostly from winter use.

The soil is moderately deep (14 inches), yet rather rocky and well-drained. It appears that some of the soil has been colluvially deposited and/or weathered-in-place from limestone parent material. Texture is a clay loam which is moderately alkaline (pH of 7.9). Phosphorous could be a limiting factor at only 8.7 ppm as values less than 10 ppm may limit normal plant growth and development. Vegetation and litter cover appear adequate to control runoff from all but the highest intensity summer storms. An erosion condition class was determined to be slight during the 2001 reading.

Browse composition consists of a mixture of bitterbrush and mountain big sagebrush with an understory of smaller shrubs. Both of the dominant browse species tend to be large shrubs, especially bitterbrush which in some instances reaches a height of 6 or 7 feet. Both species demonstrated moderate to heavy levels of hedging and high levels of decadence in 1984. A confounding factor in assessing age structure, reported in 1984, was a fairly recent die-off of bitterbrush and sagebrush that affected 10% to 20% of the total population. Although some of the deaths are obviously the result of rodent activity during the winters of 1983-85, a complete explanation of the die-off is not possible. Disease or insect infestation is also a possibility. Seventeen percent of the sagebrush population displayed poor vigor in 1984 increasing to 18% in 1990. Decadency rates were also moderately high at 67% in 1984 and 55% in 1990. The browse stand on this area is at best, thought barely stable in 1984. Age and form class both suggested declining populations. During the 1996 reading, the sample size was greatly increased. Estimated density of mountain big sagebrush declined to 360 plants/acre. Dead plants, first counted in 1996, numbered nearly as many as live ones (300 plants/acre). Some of the decline in density is due to the larger sample. However, the large proportion of dead plants in the population indicates a sagebrush decline. This is most likely the result of prolonged drought along with winter injury, which has been common for the sagebrush populations of Utah. No seedlings and few young plants were encountered in 1996. By 2001, density of sagebrush had stabilized at 300 plants/acre. Use was mostly light to moderate, vigor was normal on all plants, and percent decadence declined from 44% in 1996 to 27% in 2001.

Bitterbrush density has remained relatively stable since 1984 at about 600 plants/acre. Use was extremely heavy in 1984 but more moderate since then. Percent decadence has also declined from a high of 78% in 1984 to 21% in 2001. Vigor has remained good and bitterbrush is vigorous with good seed production. Annual leader growth averaged 3 inches in 2001.

Grasses and forbs are irregularly distributed, but provide good cover. Composition is poor, because of the predominance of weedy annuals. Cheatgrass and Japanese brome alone, accounted for 82% of the grass cover in 1996 and 2001. Bluebunch wheatgrass and bulbous bluegrass are the only moderately abundant perennial grasses found on the site. The forb component has fair diversity and quality. The most common forbs would include yellow salsify, gray Lomatium, and yellow sweetclover. Most forbs showed some evidence of use in 1984. Annual and biennial weeds are common and include a species of particular note, dyers woad.

1984 APPARENT TREND ASSESSMENT

Both soil and vegetative trends appear to be marginally stable at this time. However, careful monitoring will be necessary to detect changes in the sagebrush and bitterbrush populations as well as accompanying changes in the occurrence of increaser species. Soil trend appears marginally stable on a soil that is potentially very erodible.

1990 TREND ASSESSMENT

The most preferred browse, bitterbrush, has increased in density while sagebrush has declined slightly. Both sagebrush and bitterbrush tend to have a moderately hedged growth form. Canopy cover from bitterbrush was estimated at 6%, while sagebrush averaged only 1% cover. Cheatgrass and Japanese brome are the most prevalent grass species. Bluebunch wheatgrass is still quite common, but it did have decreased values for nested frequency and quadrat frequency. There is a fair diversity of perennial forbs, but many are weedy increasers.

TREND ASSESSMENT

soil - stable but fair condition (3)

browse - stable (3)

herbaceous understory - stable for grasses and up for forbs, slightly up overall (4)

1996 TREND ASSESSMENT

Soil trend is stable. Protective ground cover is abundant and more than adequate to protect the soil from erosion. The sagebrush and bitterbrush die-off, which started in the early 1980's, appears to have stabilized. Mountain big sagebrush is lightly utilized with improved vigor and a declining decadency rate. Bitterbrush is moderately utilized with good vigor and no decadent plants sampled. No seedlings or young have been sampled during any reading. Trend for browse is considered stable with the decline in density counterbalanced by the lighter use and improved vigor. Some of the lower population estimates can also be attributed to the much larger sample now being taken which gives better estimates for populations that are discontinuous and/or clumped. The herbaceous understory is dominated by annual grasses and weedy forbs which adversely effect shrub recruitment. Sum of nested frequency for perennial grasses increased since 1990, but this increase comes largely from the appearance of bulbous bluegrass. Bluebunch wheatgrass increased slightly in nested frequency. Sum of nested frequency for forbs declined slightly overall. Nested frequency for dyers woad increased significantly since 1990. Trend for the herbaceous understory is considered stable but in poor condition because it is dominated by weedy species.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - stable but dominated by annuals and weedy species (3)

2001 TREND ASSESSMENT

Trend for soil is stable due to abundant herbaceous and litter cover. There is little unprotected bare ground on the site and the erosion condition class is slight. Trend for the key browse species, bitterbrush followed by mountain big sagebrush, is considered stable. Bitterbrush shows moderate use, good vigor, and 21% decadence. Mountain big sagebrush numbers only 300 plants/acre. It displays light to moderate use, good vigor, and a declining decadency rate (44% to 27%). Trend for the herbaceous understory is also stable. Sum of nested frequency for perennial grasses and forbs have remained similar to 1996 estimates. The primary

perennial grasses, bluebunch wheatgrass and bulbous bluegrass, have declined slightly in nested frequency but not significantly. Annual grasses have changed in composition from predominately Japanese brome to cheatgrass brome since 1996, but percent cover of annual and perennial grasses have remained similar. The perennial forbs, yellow sweet clover and yellow salsify, have declined significantly in nested frequency.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - stable (3)

HERBACEOUS TRENDS --

Herd unit 02 , Study no: 9

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'84	'90	'96	'01	'84	'90	'96	'01	'96	'01
G	Agropyron spicatum	125	105	108	95	50	41	44	40	2.99	3.35
G	Agropyron trachycaulum	-	-	7	-	-	-	2	-	.06	-
G	Bromus brizaeformis (a)	-	-	2	10	-	-	1	5	.00	.05
G	Bromus japonicus (a)	-	-	_b 343	_a 152	-	-	98	62	17.68	2.40
G	Bromus tectorum (a)	-	-	_a 204	_b 302	-	-	60	87	8.41	24.20
G	Poa bulbosa	-	-	83	73	-	-	32	26	2.65	2.36
G	Poa pratensis	4	10	-	-	1	3	-	-	-	-
G	Poa secunda	_a -	_{ab} 10	_a 3	_b 19	-	5	3	9	.04	.09
Total for Annual Grasses		0	0	549	464	0	0	159	154	26.10	26.65
Total for Perennial Grasses		129	125	201	187	51	49	81	75	5.74	5.82
Total for Grasses		129	125	750	651	51	49	240	229	31.85	32.48
F	Achillea millefolium	_b 14	_a -	_a -	_{ab} 8	5	-	-	4	-	.21
F	Agoseris glauca	_{ab} 14	_b 26	_a 1	_a 1	8	13	1	1	.00	.03
F	Allium acuminatum	_b 45	_b 29	_a 6	_b 26	24	16	2	14	.04	.17
F	Alyssum alyssoides (a)	-	-	137	151	-	-	49	55	.39	.71
F	Artemisia ludoviciana	4	3	10	6	2	1	5	2	.26	.30
F	Aster chilensis	_b 49	_b 40	_a 2	_a 4	17	16	1	2	.00	.01
F	Astragalus spp.	_a -	_b 13	_a -	_a -	-	6	-	-	-	-
F	Astragalus utahensis	1	3	2	1	1	1	1	1	.00	.03
F	Balsamorhiza sagittata	5	5	3	5	2	3	2	2	.53	.22
F	Camelina microcarpa (a)	-	-	-	6	-	-	-	2	-	.01
F	Chaenactis douglasii	-	1	-	-	-	1	-	-	-	-
F	Cirsium undulatum	2	5	5	-	1	3	3	-	.33	-
F	Comandra pallida	8	-	2	-	3	-	1	-	.03	-
F	Crepis acuminata	-	-	-	1	-	-	-	1	-	.02
F	Cymopterus spp.	-	-	-	-	-	-	-	-	.03	-

T y p e	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'84	'90	'96	'01	'84	'90	'96	'01	'96	'01
F	Cynoglossum officinale	_a 5	_b 27	_a 2	_a 11	2	15	1	5	.00	.12
F	Epilobium brachycarpum (a)	-	-	_b 46	_a 24	-	-	21	8	.22	1.66
F	Galium aparine (a)	-	-	36	-	-	-	13	-	.40	-
F	Gilia aggregata	-	4	-	-	-	3	-	-	-	-
F	Hackelia patens	_a 1	_{ab} 10	_a -	_b 47	1	5	-	18	-	.79
F	Holosteum umbellatum (a)	-	-	5	6	-	-	2	2	.01	.03
F	Isatis tinctoria	_a -	_b 23	_c 65	_b 25	-	10	31	11	1.33	1.20
F	Lappula occidentalis (a)	-	-	-	1	-	-	-	1	-	.00
F	Lactuca serriola	_a -	_c 67	_b 28	_c 99	-	38	13	42	.15	.93
F	Linum lewisii	20	22	29	15	9	12	14	8	.37	.16
F	Lithospermum ruderales	10	8	9	11	5	4	4	8	.54	.58
F	Lomatium grayi	97	118	107	125	37	45	41	46	2.96	6.04
F	Melilotus officinalis	_a 2	_a 15	_b 100	_a 4	2	7	41	3	5.01	.19
F	Penstemon humilis	_a 2	_b 10	_a 1	_{ab} 3	2	5	1	3	.03	.06
F	Phlox hoodii	_b 12	_b 13	_a -	_a -	5	5	-	-	-	-
F	Tragopogon dubius	_b 159	_b 163	_b 156	_a 102	68	70	68	51	2.96	1.90
F	Trifolium spp.	_a -	_a -	_a -	_b 32	-	-	-	12	-	.45
F	Unknown forb-perennial	-	-	1	-	-	-	1	-	.06	-
F	Veronica biloba (a)	-	-	_a 31	_b 103	-	-	13	36	.11	.60
Total for Annual Forbs		0	0	255	291	0	0	98	104	1.15	3.03
Total for Perennial Forbs		450	605	529	526	194	279	231	234	14.70	13.46
Total for Forbs		450	605	784	817	194	279	329	338	15.85	16.49

Values with different subscript letters are significantly different at alpha = 0.10 (annuals excluded)

BROWSE TRENDS --

Herd unit 02 , Study no: 9

Type	Species	Strip Frequency		Average Cover %	
		'96	'01	'96	'01
B	Artemisia tridentata vaseyana	14	14	2.04	1.60
B	Chrysothamnus viscidiflorus viscidiflorus	4	5	.30	.15
B	Gutierrezia sarothrae	10	11	.43	.51
B	Juniperus osteosperma	1	0	-	-
B	Juniperus scopulorum	0	0	.85	-
B	Purshia tridentata	17	20	9.03	6.37
B	Symphoricarpos oreophilus	10	9	1.38	1.96
Total for Browse		56	59	14.05	10.60

CANOPY COVER --

Herd unit 02 , Study no: 9

Species	Percent Cover	
	'96	'01
Juniperus scopulorum	-	1

BASIC COVER --

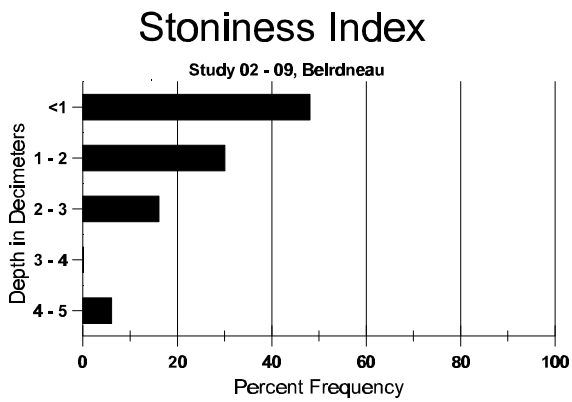
Herd unit 02 , Study no: 9

Cover Type	Nested Frequency		Average Cover %			
	'96	'01	'84	'90	'96	'01
Vegetation	394	376	1.25	14.50	54.68	54.55
Rock	219	187	20.25	9.00	12.78	11.34
Pavement	184	277	19.50	31.00	5.56	16.53
Litter	400	377	48.00	39.00	48.74	43.50
Cryptogams	14	14	.25	0	.20	.07
Bare Ground	127	136	10.75	6.50	6.39	5.70

SOIL ANALYSIS DATA --

Herd Unit 02, Study no: 09, Beirdneau

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
13.8	64.6 (15.8)	7.9	26.7	38.0	35.3	3.2	8.7	211.2	.5



PELLET GROUP FREQUENCY --

Herd unit 02 , Study no: 9

Type	Quadrat Frequency	
	'96	'01
Deer	1	6
Elk	-	-

Pellet Transect	
Pellet Groups per Acre 01	Days Use per Acre (ha) 01
218	17 (41)
44	3 (8)

BROWSE CHARACTERISTICS --

Herd unit 02 , Study no: 9

Artemisia tridentata vaseyana																			
A Y G R E	Form Class (No. of Plants)	Vigor Class									Plants Per Acre	Average (inches) Ht. Cr.		Total					
		1	2	3	4	5	6	7	8	9		1	2		3	4			
Y	84	-	1	-	-	-	-	-	-	-	1	-	-	-	66			1	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
M	84	-	-	5	-	-	-	-	-	-	5	-	-	-	333	22	27	5	
	90	5	-	-	-	-	-	-	-	-	5	-	-	-	333	24	32	5	
	96	7	2	-	-	-	-	-	-	-	9	-	-	-	180	23	40	9	
	01	10	1	-	-	-	-	-	-	-	11	-	-	-	220	30	45	11	
D	84	-	-	12	-	-	-	-	-	-	9	-	3	-	800			12	
	90	5	1	-	-	-	-	-	-	-	4	-	1	1	400			6	
	96	2	4	-	2	-	-	-	-	-	7	-	-	1	160			8	
	01	2	1	-	1	-	-	-	-	-	4	-	-	-	80			4	
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	300			15	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	360			18	
% Plants Showing		Moderate Use			Heavy Use			Poor Vigor			%Change								
'84		06%			94%			17%			-39%								
'90		09%			00%			18%			-51%								
'96		33%			00%			06%			-17%								
'01		13%			00%			00%											
Total Plants/Acre (excluding Dead & Seedlings)												'84	1199	Dec:	67%				
												'90	733		55%				
												'96	360		44%				
												'01	300		27%				
Chrysothamnus nauseosus albicaulis																			
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	45	61	0	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
% Plants Showing		Moderate Use			Heavy Use			Poor Vigor			%Change								
'84		00%			00%			00%											
'90		00%			00%			00%											
'96		00%			00%			00%											
'01		00%			00%			00%											
Total Plants/Acre (excluding Dead & Seedlings)												'84	0	Dec:	-				
												'90	0		-				
												'96	0		-				
												'01	0		-				

A Y G R E	Form Class (No. of Plants)	Vigor Class				Plants Per Acre	Average (inches)		Total						
		1	2	3	4		Ht.	Cr.							
Chrysothamnus viscidiflorus viscidiflorus															
S	84	-	-	-	-	-	-	-	-	-	-	0			0
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	1
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Y	84	-	-	-	-	-	-	-	-	-	-	0			0
	90	2	-	-	-	-	-	-	-	-	2	-	-	-	2
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0
M	84	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	1
	96	3	-	-	1	-	-	-	-	-	4	-	-	-	4
	01	6	-	-	-	-	-	-	-	-	6	-	-	-	6
D	84	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	0			0
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	1
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor		%Change							
'84		00%		00%		00%									
'90		00%		00%		00%		-50%							
'96		00%		00%		00%		+29%							
'01		00%		00%		00%									
Total Plants/Acre (excluding Dead & Seedlings)											'84	0	Dec:	0%	
											'90	199		0%	
											'96	100		0%	
											'01	140		14%	
Gutierrezia sarothrae															
Y	84	7	-	-	-	-	-	-	-	-	7	-	-	-	7
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0
M	84	21	-	-	-	-	-	-	-	-	21	-	-	-	21
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	1
	96	20	-	-	-	-	-	-	-	-	20	-	-	-	20
	01	29	-	-	-	-	-	-	-	-	29	-	-	-	29
% Plants Showing		Moderate Use		Heavy Use		Poor Vigor		%Change							
'84		00%		00%		00%		-96%							
'90		00%		00%		00%		+84%							
'96		00%		00%		00%		+31%							
'01		00%		00%		00%									
Total Plants/Acre (excluding Dead & Seedlings)											'84	1866	Dec:	-	
											'90	66		-	
											'96	400		-	
											'01	580		-	

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Juniperus osteosperma																		
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20	-	-	1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>				
'84		00%				00%				00%								
'90		00%				00%				00%								
'96		00%				00%				00%								
'01		00%				00%				00%								
Total Plants/Acre (excluding Dead & Seedlings)												'84	0	Dec:	-			
												'90	0		-			
												'96	20		-			
												'01	0		-			
Purshia tridentata																		
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
M	84	-	-	2	-	-	-	-	-	-	2	-	-	-	133	45	53	2
	90	3	4	-	-	-	-	-	-	-	7	-	-	-	466	63	92	7
	96	4	12	1	-	2	-	-	-	-	19	-	-	-	380	52	88	19
	01	2	15	1	-	3	-	-	-	-	20	1	-	-	420	58	93	21
D	84	-	-	7	-	-	-	-	-	-	7	-	-	-	466			7
	90	2	1	-	-	-	-	-	-	-	2	-	-	1	200			3
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	-	2	2	1	1	-	-	-	-	6	-	-	-	120			6
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	100			5
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	80			4
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>				
'84		00%				100%				00%				+10%				
'90		50%				00%				10%				-43%				
'96		74%				05%				00%				+32%				
'01		75%				11%				00%								
Total Plants/Acre (excluding Dead & Seedlings)												'84	599	Dec:	78%			
												'90	666		30%			
												'96	380		0%			
												'01	560		21%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Symphoricarpos oreophilus																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	01	8	-	-	-	-	-	-	-	-	-	8	-	-	-	160		8
Y	84	3	-	-	-	-	-	-	-	-	3	-	-	-	200		3	
	90	2	-	-	-	-	-	3	-	-	5	-	-	-	333		5	
	96	3	-	-	-	-	-	-	-	-	3	-	-	-	60		3	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	84	-	2	-	-	-	-	-	-	-	2	-	-	-	133	32	31	2
	90	2	-	-	1	-	-	3	-	-	6	-	-	-	400	16	28	6
	96	3	1	-	4	-	-	-	-	-	6	-	2	-	160	24	51	8
	01	8	-	-	2	-	-	-	-	-	10	-	-	-	200	30	57	10
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		40%			00%			00%			+55%							
'90		00%			00%			00%			-67%							
'96		08%			00%			17%			-17%							
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	333	Dec:	0%			
												'90	733		0%			
												'96	240		8%			
												'01	200		0%			